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ABSTRACT

This publication contains the first two of three training workshop manuals designed to be used in conducting an update of the Indonesian Education and Human Resources Sector Assessment. Workshop I covers the basic concepts, skills, and methods needed to design subsector updates and develop a draft plan for update activities. Workshops II and III test, evaluate, and revise skills and products with a special emphasis on improving draft reports. In the Workshop I manual, a framework is provided to identify the information and analyses required for the assessment update. The manual also provides information on basic concepts and definitions, the education-production function, indicators of equity and efficiency, quantitative data methods, components of subsector descriptions, interview methods, cost analysis, unit and cycle cost calculations, and postworkshop assignments. The Workshop II manual focuses on the use of concepts and skills in sector work. There are two major objectives: (1) review, discuss, and finalize the National and provincial contexts for the review of primary and secondary schooling, and describe the status of their subsectors, as well as needs, plans, and constraints; and (2) analyze the issues related to equity, internal efficiency, external efficiency, administration and supervision, and the costs and financing of primary and junior secondary schooling in each province. (JPT)

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EDUCATIONAL POLICY AND PLANNING PROJECT

A GOVERNMENT OF INDONESIA - USAID PROJECT

Sector Review Workshops I and II Pengian Kebijakan Subsektor Pendidikan SD dan SMP

East Java Province
West Java Province
South Sulawesi Province

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
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PREFACE

The Educational Policy and Planning (EPP) Project is a seven year project conducted jointly by the Indonesia Ministry of Education (MOEC) and the United States Agency for International Development (USAID). The overall project objective is to improve the quality of education in Indonesia by assisting the MOEC, through the Office of Educational and Cultural Research and Development (Balitbang Dikbud), to formulate better policies and long-term plans. The project aims to improve policy formulation and long-term planning by improving the timeliness, relevance and accuracy of educational data collection, the subsequent analyses of such data, and their ultimate use for policy and decisionmaking.

There are three major components of the EPP Project: (1) development of an integrated management informations system (MIS) within the MOEC, (2) enhancement of MOEC policy research and analysis capacity, and (3) support for MOEC institutional development at the national and provincial level through training and technical assistance. EPP technical advisory staff work closely with counterpart Indonesian staff as part of a collaborative process of developing institutional capacity.

Dr. Boediono
Head, Center for Informatics
Office of Educational and Cultural Research and Development
Department of Education and Culture
Republic of Indonesia

The EPP Project in collaboration with the USAID Improving the Efficiency of Educational Systems (IEES) Project, publishes EPP documents in order to disseminate this knowledge and extend its usefulness. EPP has carried out a series of policy studies designed to provide answers to key questions facing Indonesian educators. These include:

The Quality of Basic Education
The Quality and Efficiency of Vocational/Technical Education
The Strengthening of Local Education Capacity
Developing Indicators of Educational Efficiency
Teacher Education Issues
Curriculum Reform and Textbook Production
Education, Economic, and Social Development

This series has been planned under the direction of Moegiadi, Balitbang Dikbud, and Boediono, Center for Informatics, Balitbang Dikbud and Simon Ju, EPP Chief of Party.

Editors for the series are Abas Gozali, Reta Hendrati Dewi, Center for Informatics, and Jerry Messec, IEES, Florida State University.

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Sector Review Workshop I

Pengian Kebijakan Subsektor Pendidikan SD dan SMP

East Java Province
West Java Province
South Sulawesi Province

Introduction

Workshop Design

This is the first of three training workshops designed to prepare you to conduct an update of the *Indonesian Education and Human Resources Sector Assessment.* Workshop I will cover the basic concepts, skills, and methods needed to design the subsector updates and develop a draft plan for update activities. Workshops II and III will test, evaluate, and revise skills and products with a special emphasis on improving the draft reports.

Assessment Framework

The attached framework will be used as the basic organizing tool of the workshop. It provides a systematic approach identifying the information and analyses needed to update the assessment.

Assessment Components	Basic Concepts	Data Needs Types & Elements	Data Sources	Analytical Methods	Presentation Mode & Context
I. Introduction					
II. Status					
• Historical Setting					
• Goals & Strategies					
• System Structure					
• Adminis-tration					
• Programs					
enrollments					

Assessment Components	Basic Concepts	Data Needs Types & Elements	Data Sources	Analytical Methods	Presentation Mode & Context
staff					
curricular materials					
failities & equipment					
evaluation & supervision					
costs & financing					
III. Analysis					
• Needs					
• Plans					
• Constraints					
IV. Issues					
• External Efficiency					
• Internal Efficiency					
• Access & Equity					
sex, ethicity, region					
• Administratic n & Supervision					
• Costs & Financing					
unit costs					
cycle costs					

Workshop Activity Schedule	
14 January	
8:00 am	Opening Remarks: Professor Dr. Moegiadi & Dr. Lynch Introduction to Workshop: Drs. Kemmerer & Cresswell
10:00	Break/ refreshments
10:30	Introduction
12:00	Lunch
2:00 pm	Basic Concepts & Definitions
5:00	Supper
7:00	Assessment of Participant's Strengths and Weaknesses
15 January	
8:00 am	Introduction of the Education Production Function
10:00	Break
10:30	Continue Discussion of the Education Production Function
12:00	Lunch
2:00 pm	Participant Exercise: Indicators
5:00	Supper
7:00	Participant Report & Discussion
16 January	
8:00 am	Components of Subsector Description
10:00	Break
10:30	Continue Discussion of Components
12:00	Lunch
2:00 pm	Participant Exercise: Data Needs
5:00	Supper
7:00	Participant Report and Discussion

Workshop Activity Schedule	
17 January	
8:00 am	Identification and Documentation of Subsector Issues; Examination of Quantitative Data
10:00	Break
10:30	Continue Discussion of Quantitative Data Methodology
12:00	Lunch
2:00	Participant Exercise
5:00	Supper
7:00	Participant Reports and Discussion
18 January	
8:00 am	Enrollment Projection Methods
10:00 am	Break
10:30	Progression, Repetition, and Dropout Rates: AssumptionsMethods
12:00	Break for the Weekend
21 January	
8:00 am	Qualitative Data: Interview Methods
10:00	Break
10:30	Continuation of Interview Methods
12:00	Lunch
2:00 pm	Practice Interview Techniques; Plan Interviews in Jakarta
5:00	Supper
7:00	Planning Techniques: Dr. Boediono
22 January	
8:00 am	Cost Analysis: Concepts and Methods
10:00	Break

Workshop Activity Schedule	
22 January cont.	
10:30	Cost Analysis cont.
12:00	Lunch
2:00 pm	Participant Exercise
5:00	Supper
7:00	Participant Report and Discussion
23 January	
8:00 am	Review of Interview Protocols and Team Assignments
10:00	Break
10:30	Continuation of Review and Preparation
12:00	Lunch
2:00 pm	Review of Post Workshops Plans and Assignments
5:00	Supper
7:00	Continue Review
24 January	
8:00 am	Field Trip to Jakarta for Data Collection
7:00 pm	Debriefing of Field Work
25 January	
8:00 am	Review of Plans for Subsector Assessments in Each Province and Sector Assessment Workshop II
10:00 am	Break
10:30	Assignments and Workshop Evaluation
11:00	Closing Remarks: Dr. Soemardi

Basic Concepts and Definitions

Sector Assessments

Sector Assessments, as the name implies, are a form of evaluation. Such assessments are designed to evaluate a sector (e.g., education) or a subsector's (e.g., primary school) performance in terms of system goals (not the researchers goals). In almost all countries two standards are used to evaluate public investments: efficiency and equity.

Efficiency

Efficiency refers to the least cost means of producing a given end or the most productive use in terms of goal attainment of a given amount of resources. Two types of efficiency analysis are useful in assessing educational systems. They are internal and external efficiency analysis.

Internal Efficiency analysis addresses the relationship between the resources (inputs) invested in an activity and the immediate or shorter term objectives (outputs) of that activity.

Typical internal efficiency issues in education include: the quality and quality of resources invested given specific goals, the processes used to transform inputs into outputs, and the reliability and validity of input, process, and output measures.

External Efficiency analysis addresses the relationship between the resources (inputs) invested in an activity and the longer term objectives (outcomes) of that activity.

Typical external efficiency issues in education include the relationship between the knowledge and skills produced at one level of the system and those required for success at either the next level of schooling or on-the-job. Other issues relate to the ability of educational systems to affect the longer term personal values, attitudes, and behaviors desired by society and as evidenced in good citizenship, good parenting, and productivity in the workplace.

Efficiency and Effectiveness.

The concept of effectiveness is subsumed under the concept of efficiency. Effectiveness refers to goal attainment without reference to the costs involved. The broader concept of efficiency adds the dimension of cost to the evaluation of goal attainment. If two schools are equally effective, the school which has used fewer resources to meet the proscribed goals is more efficient.

Equity

Equity simply means fairness. Equity standards, therefore, reflect societal consensus at a given point in time about what constitutes a fair allocation of resources. In terms of education this may be summarized as who pays, who benefits, and why. Equity analysis, therefore, may focus on either the collection of resources for schooling (who pays) or the distribution of resources for schooling. Typical equity issues include those related to access to schooling of different groups (ethnic minorities, women, handicapped individuals, etc.) and the supply of teachers and other government resources to individual schools. Equity issues can be further distinguished on the basis of whether they are cases of horizontal or vertical equity.

Horizontal equity refers to the treatment of individuals who are considered to be similar in terms of certain relevant characteristics. Whether or not primary students of average ability in Jakarta and Sulawesi have the opportunity to learn the same curriculum is a horizontal equity issue.

Vertical equity refers to the treatment of individuals who are considered to be dissimilar in terms of certain characteristics. Whether remote rural or handicapped students should be provided with greater resources for learning is a vertical equity issue.

The Education Production Function

The Education Production Function is simply a mathematical formula that describes the relationship between desired outputs or outcomes and inputs. Here we are interested not so much in the mathematics but in modeling the relationships in the production of education. The basic model is shown on the next few pages.

The model outlined in the two figures suggests that the long-term goals of the educational system (success at the next level of schooling or on the job, good citizens, and good parents are related to the shorter-term system outputs (education outputs (enhanced cognitive, social, and physical skills). The ability of the system to produce the desired outputs is, in turn, a function of the quality and quantity of the inputs and the processes used to transform those inputs into outputs.

Inputs

Educational inputs consist of all the school, classroom, community, and home resources invested in the production of learning and other objectives of schooling.

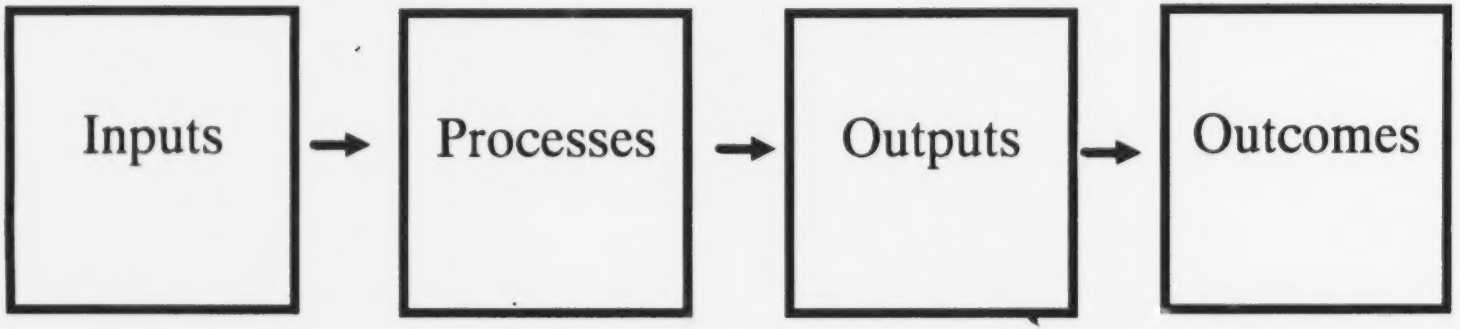
School resources consist of the quality and quantity of resources available in the school. Indicators of the quality and quantity of school resources include such things as the characteristics of the:

- personnel (administrators, teachers, students, etc.)
- curriculum
- facilities
- textbooks, materials, and equipment
- etc.

Classroom resources consist of the the quality and quantity of resources assigned to a particular class. Indicators of the quality and quantity of classroom resources include such things as the characteristics of:

- teacher
- students
- space
- textbooks, materials, and equipment
- etc.

The Education Production Function



The Education Production Function

Inputs	Processes	Outputs	Outcomes
School Resources	School organization	Gain in cognitive skills	Success at the next level of schooling or on the job
Classroom resources	Classroom methodologies	Gain in social skills	Good citizens
Community resources	Home/ community organization	Gain in physical dexerity	Good parents
Home resources			

Community resources consist of the quality and quantity of learning related resources available in the community. Indicators of the quality and quantity of community resources include such things as the characteristics of:

- library
- community center
- tutorial services
- etc.

Home resources consist of the quality and quantity of learning related resources available in the home. Indicators of the quality and quantity of family resources include such things as the characteristics of:

- parents
- parental time spent with children
- books
- computers
- facilities for study
- etc.

Processes

The processes by which inputs are transformed into the desired outputs can also be divided into those that take place in the school, classroom, community, and home. In schools, teacher and students with particular characteristics (ability, age, etc.) are sorted into classrooms of a specific size. The way they are sorted affects the methodologies teachers are able to use. For example, if a classroom was built for 20 students but is assigned to a class of 40 students, the teacher cannot divide the students into small groups. Similarly, if students of like ability are grouped together, the possibility does not exist of organizing the class so that the quicker students help the slower students.

School processes consist of the way resources are combined at the school building level to support student learning. Indicators of the quality of school processes include:

- Organization of students and teachers into classes
- Organization of extracurricular activities
- Organization of in-school study time, etc.

Classroom processes consist of the way the teacher combines resources (including her own time) to produce student learning. Indicators of the quality and quantity of quality of classroom processes include such things as:

- Type of methodology
  Recitation
  Small group work
  Seatwork
  Homework
- Proportion of time spent on instruction
- Student time-on-task
- etc.

Community & Home Processes consist of the way resources are combined at the community and household levels to support student learning. Indicators include such things as:

- The way parents spend time with children
- The format of community programs
- etc.

Outputs

While it is assumed that schools, communities, and families desire the same outputs, such is not always the case. Where all prioritize outputs in the same way (e.g. all emphasize gains in student learning, all resources can be said to supplement those provided by the school. Some parents, however, may use their resources to complement what is done in the school e.g., they may wish to emphasize religious learning. This would lead them to spend their resources on religion lessons. Other parents may wish to use their resources to encourage students to pursue goals other than those related to learning, e.g. take care of younger siblings or work in the fields, etc. In such cases, they may use their resources to compete with the school. Understanding whether parental and community resources are supplementary, complementary, or competitive to those provided in school is important to understanding the particular mix of outputs produced by any one school. Indicators of outputs include such things: progression, repetition, and graduation rates and student achievement.

Outcomes

The longer-term outcomes of schooling depend, as do the shorter-term outputs on what the actual goals of the school, community, parents, and the student were, as well as on the inputs and processes. Indicators of outcomes include success in higher levels of schooling, success on-the-job, etc.

Participant Exercise: Indicators of Equity and Efficiency

The purpose of this exercise is to practice the concepts and skills needed to understand, review, and develop indicators of efficiency and equity as part of sector assessment work. The concepts involved in this exercise include:

- internal efficiency
- equity
- goals
- inputs
- outputs
- aggregation of data
- disaggregation of data

1. Examine Table 48 in *Statistic Persekolahn, 1988/89*. Prepare a brief written statement of whether or not the ratio in Table 48 is a good indicator of resource inputs and why or why not.

2. Does the data in Table 48 indicate equity problems? If so, what are they?

3. Prepare a rough draft of a chart which would show whether or not there are equity problems indicated in Table 48.

4. Describe how the ratios in Table 48 could have been aggregated from other tables in *Statistic Persekolahn, 1988/89*. Identify the tables (by number and page) contsining disaggregated components of Table 48.

5. Prepare a table which shows whether or not a disaggregated examination of pupil/teacher ratios reveals the same patterns as the aggregated ones.

6. Briefly describe the assumptions which appear to have been used in computing the ratios in Table 48. Are these good assumptions.

Participant Exercise: Quantitative Data Methods

This exercise uses three tables from the *Education and Human Resources Sector Assessment: Yemen Arab Republic* (1986). Copies of the tables are available.

Table 4.3 presents data on student characteristics and enrollments. What does the table tell you about the participation of boys and girls in primary schools?

Do Tables 4.4 and 4.5 improve the picture of the opportunities for boys and girls shown in Table 4.3.

Using all three tables, prepare a presentation on the different participation rates of boys and girls in primary schools in Yemen. Do these participation rates suggest an equity problem?

What other data would you like to review before making recommendations about improving participation rates in primary education?

TABLE 4.3

PRIMARY SCHOOL ENROLLMENTS, BY GOVERNORATE
1982/83

GOVERNORATE/ SEX OF STUDENT	GRADE LEVEL						
	ONE	TWO	THREE	FOUR	FIVE	SIX	TOTAL
Sana'a - Male	37610	30198	24548	17915	11153	7090	128,513
Female	8511	6439	4636	2574	1724	1439	25,321
Taiz - Male	26114	22954	21683	18265	14715	11707	115,438
Female	10037	6941	5104	3353	2346	1822	29,603
Hodeidah-Male	15680	13325	8956	5718	3904	2706	50,289
Female	3326	2430	1663	1113	816	561	9,909
Ibb - Male	26764	22323	17687	11687	6288	3698	88,447
Female	5147	3553	1910	879	422	273	12,184
Dhamar - Ma'a	16007	13175	9493	5185	2975	1719	48,554
Female	1499	1083	740	255	95	56	3,728
Hajjah - Male	9720	8369	6004	3338	1813	917	30,161
Female	794	538	265	123	64	27	1,811
Baidah - Male	5076	3670	3530	3701	1342	897	17,206
Female	998	680	483	194	96	71	3,520
Sa'ada - Male	3591	2739	2889	1635	904	499	12,257
Female	165	144	94	64	14	8	489
Mahweet- Male	3838	3998	3964	2664	1230	625	16,319
Female	543	314	313	103	42	27	1,242
Ma'rib - Male	1761	881	849	765	490	351	5,097
Female	146	52	50	11	8	3	270
Al-Jawf- Male	667	598	621	550	174	33	2,643
Female	81	51	58	20	1	-	211
TOTAL - Male	146,828	122,230	100,214	70,423	44,987	30,243	514,924
Female	31,247	22,225	15,314	8,689	5,626	4,287	87,388

Source: Ministry of Education, Educational Statistics, 1984.

TABLE 4.4
SCHOOL AND CLASSROOM DISTRIBUTION

BY GOVERNORATE AND SEX

	Male		Female		Coeducational	
	Schools	Classes	Schools	Classes	Schools	Classes
Sana'a	481	1832	5	20	679	3610
Taiz	82	469	5	31	470	2898
Hodeidah	264	1015	21	149	55	420
Ibb	193	748	4	33	363	1745
Dhamar	296	1039	2	11	156	685
Hajjah	276	890	1	9	110	501
Beidah	99	427	3	13	56	306
Sa'ada	148	541	4	17	33	144
Mahweet	88	295	--	--	117	522
Ma'rib	76	275	--	--	21	96
Al-Jawf	27	83	--	--	34	121
TOTAL	2030	7614	45	283	2094	11048

Male Enrollment:	196,660	--	318,264
Female Enrollment:	--	12,111	75,177

Source: Ministry of Education, Educational Statistics, 1984.

TABLE 4.5

COMPLETE AND INCOMPLETE PRIMARY SCHOOLS, 1982/83

BY TYPE AND HIGHEST GRADE OFFERED

TYPE OF SCHOOL	Schools, by Highest Grade Presently Offered						
	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade	Sixth Grade	(Complete School)
Boys' Schools:							
Number	183	281	434	338	336	358	
Enrollment	11707	19232	31772	34231	30965	68753	
% of Total Enrollment	6.0%	9.8	16.2	17.4	15.7	35.0	
Girls' Schools:							
Number	7	7	5	2	3	21	
Enrollment	410	500	390	86	573	10152	
% of Total Enrollment	3.4%	4.1	3.2	0.7	4.7	83.8	
Coeducational Schools:							
Number	51	131	296	383	377	856	
Enrollment	3400	10798	29173	41968	47052	261050	
% of Total Enrollment	0.9%	2.7	7.4	10.7	12.0	66.4	
All Schools:							
Number	241	419	735	723	716	1235	
Enrollment	15517	30530	61335	76285	78590	339955	
% of Total Enrollment	2.6%	5.1	10.2	12.7	13.1	56.5	

Source: Ministry of Education, Educational Statistics, 1984.

Components of Subsector Descriptions

Outline of Data Needs

Introduction

A. Rationale for concentration of Basic Education

B. Rationale for concentration on the provincial level

National Context

A. History and Status

B. Educational policies, plans, strategies

- In general
- Specific to Primary and Junior Secondary

Plans for expansion
- a. MOEC
  - public
  - private
- b. MOR
  - public
  - private

Plans for improvement
- a. MOEC (curriculum, textbooks, teachers, etc.)
  - public
  - private
  - nonformal
  - Packet B
- b. MOR (curriculum, textbooks, teachers, etc.)
  - public
  - private

Provincial Context

A. History and Status

B. Educational policies, plans, strategies

- In general
- Specific to Primary and Junior Secondary

Plans for expansion

a. MOEC
   - public
   - private

b. MOR
   - public
   - private

Plans for improvement

a. MOEC (curriculum, textbooks, teachers, etc.)
   - public
   - private
   - nonformal
   - Packet B

b. MOR (curriculum, textbooks, teachers, etc.)
   - public
   - private

C. Economic conditions and implications

- General economic conditions
- Transition to an industrial economy/society
  a. growth by sectors of economy
  b. growth in govt. revenues
- Manpower needs for Basic Education graduates

D. Political and social setting

- Decentralization
- Public demand for schooling

Programmatic Concerns

A. Students

- numbers
- gender
- ability & achievement
- age
- attendance rates
- graduation rates
- repetition rates
- drop-out rates
- social and economic background

B. Schools

- number
- number of complete/incomplete cycle
- classrooms/classes; capacities
- facilities (libraries, labs etc.)
- equipment
- location
- age and condition
- size
- type of school

C. Staff

- numbers
- teachers
- administrators
- others
- education level
- experience
- gender
- marital status
- age
- status: full/part time
- subject matter speciality
- second jobs
- work load

D. Curriculum and materials

- time on subjects
- availability of textbooks
- science materials
- course credits
- articulation with lower and higher levels
- local subjects

E. Evaluation and supervision

- teacher made tests
- national exams
- supervision visits
- frequency, content, procedures, results
- supervisory ratios

F. Costs and financing

- income of schools: sources and amounts
- expenditures: types, amounts
- controls/guidelines and decision making

Synthesis

A. Needs

B. Plans

C. Constraints

Issues

A. Internal efficiency

B. External efficiency

C. Access and equity

D. Cost and Financing

E. Management

Policy Recommendations

(Note: there should be a policy recommendation for each of the issues described)

Participant Exercise

Expand *Outline of Data Needs* as appropriate and next to each item determine whether the data exists (already collected in the form you need it) and/or where to obtain the data. In addition, assign team members the responsibility for the collection of different types of data.

Interview Methods

Review of basic purposes of the practice interview sessions at Balitbang Dikbud

A. Obtain experience at identifying data sources, issues, and related policy information from experts and policy makers. Interviews are arranged so that small teams (3-4 participants) will conduct the interviews. Each team will have a leader with responsibility to begin and moderate the interview. Other interview teams members will share responsibility for asking questions and taking notes.

B. Obtain experience in managing the flow and conduct of semi-structured interviews. Flow of interview questions and topics is not fully predictable or under the complete control of the interviewers in a semi-structured approach. Such an approach is necessary to insure that the responses reflect as closely as possible the ideas and understandings of the respondents. As a result, the interviewers must remain flexible in the order of questioning and sequence of note taking.

In order to remain flexible and maintain coverage of all the necessary content, the interviewers must have a very clear and detailed knowledge of the full range of questions to be asked and the kinds of responses desired. The interviewers must maintain a running inventory of the topics covered, questions asked and answered, and material yet to be covered. Interview team members can assist each other in this task, as well in recording responses.

C. Obtain experience in maintaining appropriate interview courtesies, protocols, and control of the interview.

- Interview openings: these include introducing the interviewers, explaining the purposes of the interview, kinds of information desired, and overall objectives of the sector work.

- Maintaining control of the interview: returning to the subject, probing for details, giving feedback to respondent, remaining alert and flexible to pursue new topics and surprise information.

- Interview closing: express appreciation to respondent (regardless of the quality and quantity of responses obtained); review uses of responses, including utility of the respondent's contribution, potential applications, and place in the overall effort; ask permission to continue interview at later date if necessary, due to new questions or accidental omission from current interview.

Preliminary data analysis

A. Initial analysis

- Material in notes should be expanded and elaborated by interviewers as soon as possible following the interview.

- Expanded notes should be divided into sections according to the topics and subtopics in the DATA NEEDS outline (which is the basic outline of the Sector Assessment Report). Separate content of notes into index cards (or other sortable medium), identified by topic and source). Interview content can then be arranged into the organizational structure of the draft report itself.

B. Expanded Analysis: possible techniques of treating interview data, based on specific issues or questions.

- Flowcharts and verbal action plans of important processes (as in management decisionmaking)

- Descriptions of decision rules and contingencies on which decisions are based.

- Definitional and conceptual structures relevant to policy problems, conflicts, and issues. For example, a detailed inquiry into what policy makers mean by "quality" when they talk about quality improvements in education.

- Identification of issues and priorities.

- Identification of needs and constraints.
  In the Sector Assessment method, the terms issues, needs, and constraints have particular meanings. An issue is a topic on which there are conflicting or incompatible positions or opinions about what action or decision should be taken. An issue is different from a problem. Policymakers may all agree on the definition of a problem, and disagree about how to solve it. For example, a shortage of teachers for the expansion of Jr. Secondary Education may be a serious problem. A related issue may be whether or not the salaries of Jr. Secondary teachers should be raised so as to attract greater numbers into those ranks.

  The term needs refers to resources or decisions that a policymaker or administrator identifies as necessary to achieve some objective. For example, expanding training facilities for Jr. Secondary teachers may require many thousand new places, and therefore new classroom space, in the appropriate Sr. Secondary schools or IKIP's. The required new classroom space would be referred to as a need.

A constraint is condition or problem that interferes with or prevents the accomplishment of an objective. Lack of sufficient financial or human resources are common constraints that are often mentioned. Other constraints could be beliefs or traditions, such as a belief that children should study only their local language in the primary grades.

A statement of priorities is one that identifies a clear order of preference among alternative actions or recommendations. That is, saying something is important is not a statement of priorities. A statement of priorities might be, for example, that expanding opportunities for Jr. Secondary Education is more important and therefore should be done before expanding opportunities in higher education.

Cost Analysis

Efficiency analysis includes effectiveness analysis. It adds to the concept of effectiveness (goal attainment), the concept of cost (what is sacrificed to realize the goal).

Effectiveness → goal attainment

Efficiency → goal attainment at the least cost

Costs are generated by the interaction of inputs and processes. For example, the cost of providing French differs with class size. If the salary of a French teacher with a masters' degree is Rp. 100,000 a month, the average cost per student is Rp. 10,000 per month in a class of 10 students; Rp. 5,000 per month in a class of 20 students; and Rp. 2,500 per month in a class of 40 students.

There are two main approaches to the analysis of educational costs. They are the aggregate approach and the ingredients approach.

Aggregate Approach

The aggregate approach uses ***existing*** expenditure data to estimate the value of the public and private investments in education. For example, the expenditure data in the Botswana Sector Assessment are broken down by source (level of government, fees), level of schooling, and type of expenditure. For example, Table 2.29, p2-102 is structured as follows:

Estimates of Local Expenditures

District/ Budget Category	District A	District B	District C	District D	District E
A. Employees					
Salaries					
Wages					
Uniforms					
Training					
B. Maintenance					

District/ Budget Category	District A	District B	District C	District D	District E
C. Special					
Furniture & Equipment					
Textbooks & Stationary					
Teaching materials					
Sports equipment, prizes, other					
Room & board for students					
Grants to mission schools for books & supplies					
Evening school sal.					
TOTAL					

In that assessment, the aggregate approach was used only for the analysis of government investments. Since information on private and community expenditures are not systematically maintained in Yemen, it was necessary to use the ingredients approach to estimate the contributions from these sources.

Ingredients Approach

The ingredients approach estimates the value of public and private investments by first listing expenditure items and then determining their cost. For example, how would you estimate the cost to families in Indonesia of a junior secondary students education in a public school. What are the ingredients?

- BP3
- Other donations

- Uniforms
- Textbooks
- Supplies
- Opportunity cost

Is cost data useful in the absence of benefit or effectiveness data? Yes, but only to identify potential problem areas. For example, if data are available on the unit cost (total cost divided by number of students) of different levels and types of schooling, you might compare the cost among levels and types. By setting primary school equal to 1.0, you might find the following.

• Primary	01.0
• Junior Secondary	04.0
• Brigades	05.3
• Other vocational/technical	11.2
• Polytechnic	15.6
• Teacher training	05.0
• University	37.8

How would you interpret this??

Basically, there are four types of cost analysis. Each type is described in detail in Levin (1983) and Windham (1988). They are:

- cost-effectiveness analysis
- benefit/cost analysis
- least-cost analysis
- cost-utility analysis

For the type of sector work you are doing, unit and cycle cost analysis, a form of cost-effectiveness analysis is especially useful and will be described later.

In Indonesia, the complexity of the education sector (public/private, the strong involvement of government and parental financing in both public and private, and the relative scarcity of detail on the routine and development budgets) make cost-analysis of any type exceptionally difficult.

Most assessments of the education sector in Indonesia rely on an ingredient approach. More specifically, attempts have been made to construct income and expenditure profiles of 'typical' schools using the ingredients approach. Step 1 involved identifying the sources of particular types of expenditure (see Vol. II, pp.6-65ff) .

	Government Sources			Private Sources		
	PDK	APBD I	APBD II	SPP/DPP	BP3	Other
A. Salaries						
1. Teaching	x			x	x	
2. Non-teaching	x					
3. Remun-eration				x	x	x
B. Texts	x					x
C. Materials	x	x		x	x	
D. Mainten-ance	x	x		x	x	
E. Upgrading	x	x	x	x	x	
F. Students						x
G. Super-vision	x					

Step 2 consisted of determining the typical characteristics of specific types of schools. These included such things as enrollments, class size, student/teacher ratio, number of full-time equivalent and part-time teachers, etc.

In step 3, the cost of major items in school budgets were estimated on the basis of the school characteristics and finally, these costs were spread over the number of students to estimate the cost per pupil per year of different levels and types of school. None of these steps could have been skipped.

Unit and Cycle Cost Calculations

Definitions

The unit cost is the total cost (sum of government and family expenditures) per student. Cycle cost is the average number of student years it is necessary to provide (and pay for) to produce a graduate. The optimal cycle cost is the unit cost times the number of years in the cycle. Cycle costs in excess of that calculation reflect wastage from either repetition or dropouts. Cycle cost analysis assumes that whatever else is desired in terms of outputs, government and parents value graduates, that is, one of the objectives of schooling is to produce graduates.

Steps in the Calculation

1. Calculate the unit cost

2. Estimate grade to grade progession (review MOEC worksheets & Windham, p. 124ff.)

3. Sum the total years of schooling for the cycle (this includes the years of schooling (including repetition) of both the graduates and the dropouts.

4. Divide the number of graduates by the total years of schooling provided.

The calculation dramatically reveals the number of graduates that can be expected relative to the number who enrolled in the cycle in the normal length of the cycle. For example, it may show that for every 100 students beginning primary school only 50 graduate in six year time. If sufficient information is available it may be clear whether this is due to excessive repetition or dropout behavior. Both can be addressed by policy. Cycle cost analysis may also expose inefficiencies related to under or over financing one sector relative to another or one type of schooling relative to another.

Participant Exercise: Unit and Cycle Costs

Based on the following data, calculate the unit and cycle costs for the following two schools.

School Expenditures (total per yr.)	School A	School B
Personnel Salaries	200,000,000	260,000,000
Textbooks	7,000,000	105,000,000
Other Instructional Materials & Supplies	3,000,000	4,000,000
Inservice Training	35,000	15,000
Maintenance	20,000	15,000
School Characteristics	School A	School B
Enrollment	400	600
Promotion Rate	I to II = .96 II to III = .98 11 to Graduation = .98	I to II = .91 II to III = .92 III to Graduation = .94
Repetition Rate	unknown	unknown
Dropout Rate	unknown	unknown

Post Workshop Assignments

1. Complete reading of the Workshop I materials:

   - Windham, D.M. (1988). *Indicators of Educational Effectiveness and Efficiency.* Tallahassee, FL: IEES, Florida State University.

   - Levin, H.M. (1983). *Cost-Effectiveness Analysis: A Primer.* Newbury Park, CA: Sage Publications.

   - Chapter One: Executive Summary. In *Indonesia Education and Human Resources Sector Review* (1986). Tallahassee, FL: IEES, Florida State University.

   - Chapter Six: Secondary Education. In *Indonesia Education and Human Resources Sector Review* (1986). Tallahassee, FL: IEES, Florida State University.

   - Pigozzi, M.J. and Cieutat, V. J. (1988). *Education and Human Resources Sector Assessment Manual.* Tallahassee, FL: IEES, Florida State University.

2. Review and revise (if necessary) data collection assignments, work calendar, and resource requests for provincial sector assessments.

3. Collect all necessary subsector data from provincial and national sources (documents). Conduct all necessary data collection interviews and compile results. (May 1)

4. Draft national and provincial context statements. (May 15)

5. Draft subsector chapter sections containing descriptions of each subsector (material in Part III of "Outline of Data Needs".(May 15)

6. Conduct analysis interviews and draft anaysis sections for each subsector Part IV and Part V of "Outline of Data Needs." (July 15)

Sector Review Workshop II

Pengian Kebijakan Subsektor Pendidikan SD dan SMP

East Java Province
West Java Province
South Sulawesi Province

Introduction

Objectives of Workshop II

The first workshop focused on the concepts and skills needed for sector work. The second focuses on the use of those concepts and skills. There are two major objectives of the workshop.

- to review, discuss, and finalize: (a) the National and provincial contexts for the review of primary and junior secondary schooling; (b) descriptions of the status of the primary and junior secondary subsectors; and (c) the description of needs, plans, and constraints.

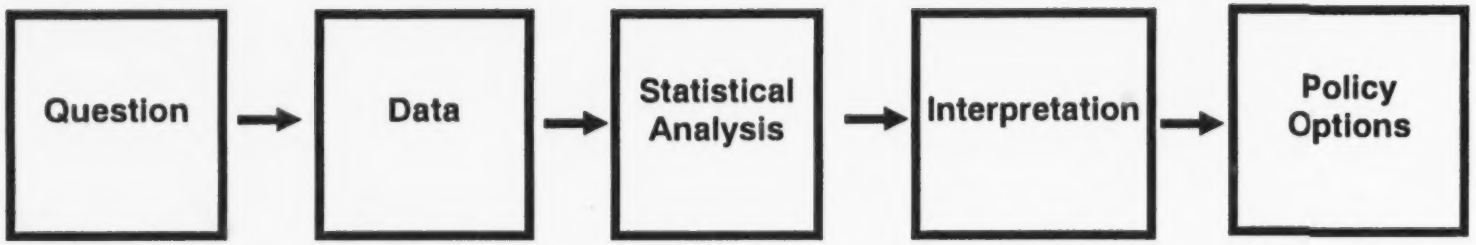
- to analyze the issues related to equity, internal efficiency, external efficiency, administration and supervision, and the costs and financing of primary and junior secondary schooling in each province.

To accomplish these objectives less time will be spent in whole group activities and more time will be spent either working in teams or on team assignments than was the case in the last workshop. Time in the whole group will be spent on the analysis of the issues you have identified.

Analytic Framework

In our work on these issues and in the small group work, the analytic frame shown on the next page will be used. Discussion will move from the question (e.g., who has access to junior secondary school) to the data (e.g. who attends junior secondary) to statistical analysis (e.g. enrollments are 85% urban, 15% rural) to the interpretation of the data (e.g. few schools are available in rural areas) to policy recommendations or options (e.g., the junior secondary grades should be added to primary schools in rural areas).

Assessment Steps



Question	*Data*	*Statistical Analysis*	*Interpretation*	*Policy Options*

QUESTIONS IN FIVE AREAS

1. Access & Equity
2. Internal Efficiency
3. External Efficiency
4. Administration & Supervision
5. Costs & Financing

Workshop Activity Schedule	
29 July	
8:00 am	Objectives of Workshop II
10:00	Break
10:30	Group reports on status of work to date
12:00	Lunch
2:00 pm	Critical analysis of work to date - Assessment of team report and report of one other province
5:00	Supper
30 July	
8:00 am	Report analysis continued
10:00	Break
10:30	Continue Discussion
12:00	Lunch
2:00 pm	Analytic Issues: Access & Equity
5:00	Supper
31 July	
8:00 am	Translation of reports
10:00	Break
10:30	Translation - individual feedback to teams continued
12:00	Lunch
2:00	Translation - individual feedback to teams continued
5:00	Supper

Workshop Activity Schedule

1 August	
8:00 am	Translation - individual feedback to teams continued
10:00	Break
10:30	Translation - individual feedback to teams continued
12:00	Lunch
2:00 pm	Translation - individual feedback to teams continued
5:00	Supper
2 August	
8:00 am	Translation - individual feedback to teams continued
10:00	Break
10:30	Translation - individual feedback to teams continued; team reports
12:00	Break for Weekend
5 August	
8:00 am	Style and documentation issues
10:00	Break
10:30	Translation - individual feedback to teams continued
12:00	Lunch
2:00 pm	Translation - individual feedback to teams continued
5:00	Supper

Workshop Activity Schedule	
6 August	
8:00 am	Review of outline and content of each section of the report
10:00	Break
10:30	Analytic Issues: Internal and External Efficiency
12:00	Lunch
2:00	Discussion continued
5:00	Supper
7 August	
8:00 am	Translation - individual feedback to teams continued
10:00	Break
10:30	Translation - individual feedback to teams continued
12:00	Lunch
2:00 pm	Translation - individual feedback to teams continued
5:00	Supper
8 August	
8:00 am	Analytic Issues: Administration & Supervision
10:00	Break
10:30	Discussion continued
12:00	Lunch
2:00 pm	Discussion continued
5:00	Supper
8:00	Pak Boediono - Seminar on planning models

Workshop Activity Schedule	
9 August	
8:00 am	Compilation of draft reports
10:00	Break
10:30	Pak Moegiadi - Discussion of issues related to provincial work

Access & Equity Questions

***Basic Question*: Who gets what & why?**

Subquestions:

Who?

- **Ethnicity/ race**
- **Socioeconomic background**
- **Sex**
- **Geographical location**

Gets What?

- **Schools**
- **Teachers**
- **Textbooks and materials**
- **science equipment**

Why?

- **Government policy**
- **Parental preference**
- **Failure of governmental policy (e.g., early stage of implementation, poor implementation, misplaced incentives, etc.)**

Question	*Data*	*Statistical Analysis*	*Interpretation*	*Policy Options*
Who goes to school?	**Enrollments by:** **- level** **- ethnicity/race** **- sex** **- geographical location**	**Breakdowns across & within categories** **Computations of simple proportions**		

Access & Equity

Sample Issue: Who Goes to School and Why?

- primary?
- junior secondary?

If the quality of school is very poor, should we worry about access?

While the educational system is still rapidly expanding should we worry about the participation rates of severly handicapped and remote children?

At what point does lack of participation constitute an equity problem?

Who should decide on who participates? Government, parents, students?

Decision rules for who should participate: What are they? What should they be?

- subjective criteria or who you know
- objective criteria - wealth, merit

Fact Finding

What information do you have on student characteristics (e.g., sex, ethnicity, religion, location, ability, etc.)

Step 1: Simple breakdowns of enrollment by level and sex.

Level:Primary						
Dist.\Grade	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6
	Number (%F)	Number (%F)	Number (%F)	Number (%F)	Number (%F)	Number (%F)
District A	1000 (40%)	968 (40%)	925 (42%)	890 (42%)	863 (43%)	849 (43%)
District B	800 (60%)	768 (60%)	722 (60%)	686 (60%)	659 (60%)	646 (60%)
District C	1600 (50%)	1552 (49%)	1490 (48%)	1403 (46%)	1291 (42%)	1147 (36%)

Note: This analysis should not be based on one years data. A more accurate picture is obtained by looking at six years data (following a cohort) or calculating a two year inter-grade cohort. To remind yourself of the differential effects of these approaches see Windham, pp.57-63.

Step 2. Initial interpretation

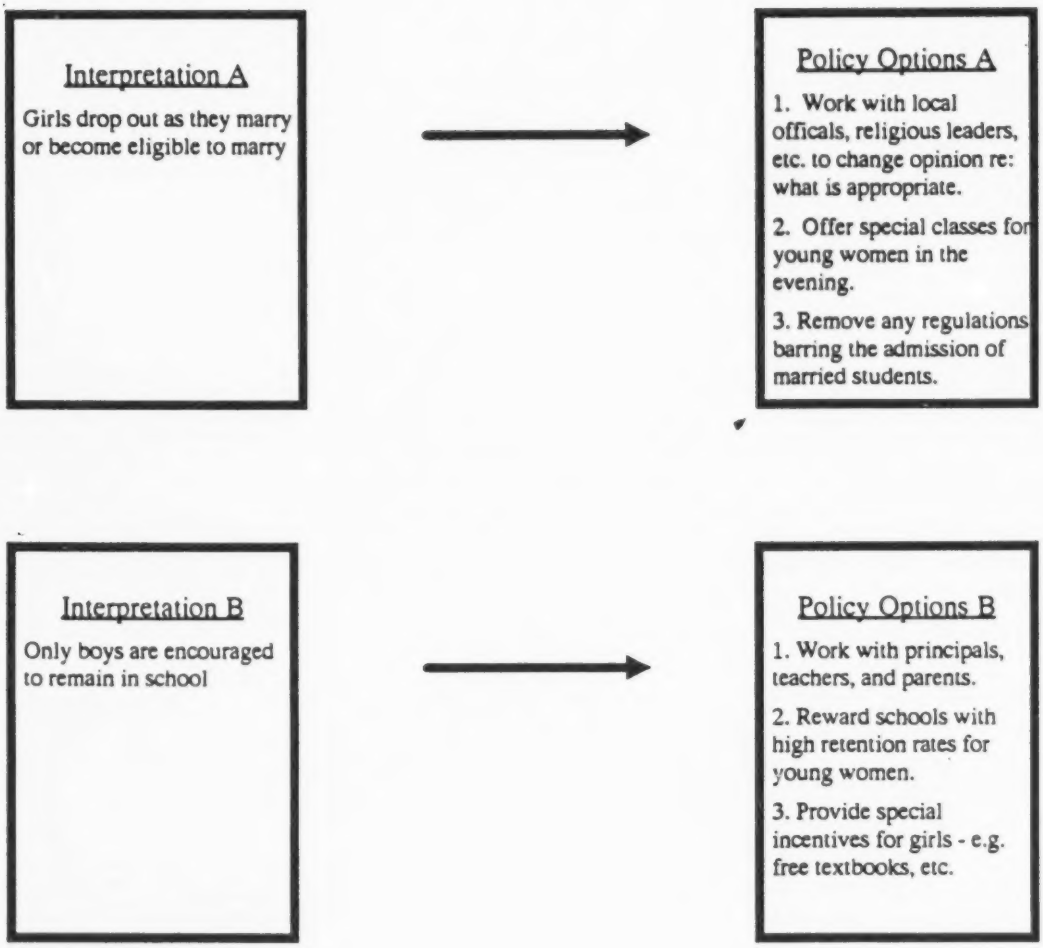
FACT: Districts A and C have differential progression rates for boys and girls while in District B boys and girls progress at the same rate. In District A fewer girls begin schooling (assume 49/51 distribution among all 6 yr olds) but once in school girls progress (stay in or are promoted) at a greater rate than do boys. In District C the opposite is true. Boys progress at a greater rate than do girls. As girls reach the upper grades their progression rates sharply fall.

Step 3: Gathering Additional Information

To understand the progression rates in these districts more information is needed. In District C it looks like girls are dropping out at a greater rate as they approach the age of marriage. Is this true? Why are the boys dropping out in District A? Are they needed for farming? Why is District B different? This information can be obtained by looking at more quantitative data (# school age boys, girls employed in the district, average age of marriage of young women, acceptance rates into junior secondary and by interviewing local leaders.

Interpretation and Policy Options

The answer to the question ***why*** reveals the constraints and opportunities for policy change. If, for instance, girls drop out as they near marriage, there may be a cultural constraints to their continuing in school. This interpretation would lead to a different set of policy options or recommendations than would the interpretation that the teachers encourage the boys but not the girls to continue in school.


Interpretation A
Girls drop out as they marry or become eligible to marry
Policy Options A
1. Work with local officals, religious leaders, etc. to change opinion re: what is appropriate.
2. Offer special classes for young women in the evening.
3. Remove any regulations barring the admission of married students.
Interpretation B
Only boys are encouraged to remain in school
Policy Options B
1. Work with principals, teachers, and parents.
2. Reward schools with high retention rates for young women.
3. Provide special incentives for girls - e.g. free textbooks, etc.

Internal Efficiency Questions

Basic Questions: **Do the quantity and quality of resources invested in schooling produce the desired short-term results? at the least cost?**

Sub questions:

- **What are the desired short-term objectives?**
- **Are the desired short-term objectives being met?**
- **What resources are invested in schooling?**
- **Are the "purchased" resources of sufficient quantity and/or quality necessary to produce the desired outputs?**
- **Are the "purchased" resources delivered to schools in a timely fashion?**
- **Are the resources used appropriately given the short-term objectives?**

Question	*Data*	*Statistical Analysis*	*Interpretation*	*Policy Options*
What resources are provided to schools?	**Distribution of qualified teachers. Teacher/student ratios by: - district - urban/rural Distribution of Books, etc.**	**Breakdown**		

External Efficiency Questions

Basic Questions: **Do the quantity and quality of resources invested in schooling produce the desired longer-term results? at the least cost? In brief are the longer-term results of schooling those desired by society?**

Sub questions:

- **What are the desired longer-term objectives of schooling?**
- **Are the desired longer-term objectives being met?**
- **How are the short-term and the long-term objectives of schooling related?**

External Efficiency

In contrast to internal efficiency which focuses on the cost-effectiveness of the processes used to produce the short-term objectives of schooling, external efficiency focuses on whether the longer-term objectives are being met cost-effectively.

Step 1: Determine the long-term objectives of schooling.

- preparation for employment
- preparation for higher levels of schooling
- preparation for participation in government as citizens, etc.

Step 2: Identify indicators of external efficiency.

- graduates are successful in gaining entrance to next level of schooling
- graduates are successful in handling the curriculum at the next level
- graduates are successful in obtaining and maintaining jobs
- graduates are good citizens
- graduates are good parents

Step 3: Gather evidence related to indicators

- Teachers at higher levels complain about students' entry level skills
- High rates of repetition are observed at first grade in next cycle
- Employers complain about graduates basic literacy and numeracy skills, attitudes toward work, etc.

Step 4: Analyse evidence, draw conclusions, and make recommendations

Sample External Efficiency Question

Is academic or vocational schooling a more cost-effective way to prepare students for the labor market?

- What data are needed to answer this question?
- What types of analysis would be needed?
- How would different data, analyses, and interpretations lead to different policy recommendations?

Question	*Data*	*Statistical Analysis*	*Interpretation*	*Policy Options*
Is academic or vocational schooling better preparation for employment?	costs and outcomes of different types of schooling?	breakdowns by type of school multivariate analysis		

Administration & Supervision

Basic Question*: *How well do the current administrative and supervisory systems promote and support quality, efficiency, and equity in the schools?

What is needed to promote and support quality, efficiency, and equity?

1. Good organizational system

    - design
    - resources
    - technology

2. Good personnel

3. Good information

4. Good decision making

What are the elements of a good organizational system?

1. Elements of organizational design

    Authority structure

    - relationship of authority to responsibility
    - appropriate foundations of authority
    - clarity in delineation of authority
    - appropriate centralization
    - functional span of control

    Coordination and control mechanisms

    Work flow and technology

    - task specialization
    - rules & procedures
    - decision making

2. Necessary resources

Tangible resources & technology

- funds
- facilities
- equipment
- transportation
- communication
- information technology

Intangible resources

- authority & status

3. Information

relevant: contributes to answering questions or resolving uncertainty about issues or problems that are important to the user of the information.

timely: available to the user when needed to answer inquiries, conduct analyses, or make decisions about important issues or problems.

accurate: reflects a true or valid observation or impression of the subject involved.

meaningful: is in a form (level of aggregation, type of presentation, or symbol system) that allows the user to interpret and understand the information

manageable: in an amount, physical medium, and organization that allows the user to perform the necessary manipulations and analyses.